AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An apparatus comprising:

a tether having a length suitable for extending through a ventricle of a heart from, at a proximal end, an atrioventricular valve annulus to, at a distal end, one of a wall of a ventricle and a papillary muscle within the ventricle; ~~and~~

an aptation device coupled to the tether at a position corresponding to a location to contact cusps of an atrioventricular valve during systole, the aptation device comprising a body having a cross-sectional dimension greater than a cross-sectional dimension of the tether; and

a fastening member including a projection capable of anchoring the fastening member to a wall of a ventricle of a heart,

wherein the tether and aptation device are suitable for percutaneous delivery to a patient, and

wherein the distal end of the tether extends beyond a distal end of the aptation device.

2. (Original) The apparatus of claim 1, wherein the aptation device is coupled about an axis of the tether.

3. (Original) The apparatus of claim 1, wherein the tether comprises a sheath and a duplex spring, wherein the sheath surrounds the duplex spring about a length of the duplex spring.

4. (Original) The apparatus of claim 3, wherein the sheath of the tether comprises a material that resists thrombosis.

5. (Original) The apparatus of claim 1, wherein the tether comprises sufficient torsional stiffness to respond in kind at the distal end to a torque applied at the proximal end.

6. (Currently Amended) The apparatus of claim 1, wherein the fastening member is coupled to a distal end of the tether ~~comprises a fastening member adapted to couple the tether to a wall of a ventricle~~ and the tether comprises sufficient tensile stiffness to withstand an extension of the tether in response to ventricular pressure changes.

7. (Original) The apparatus of claim 1, wherein the distal end of the tether comprises a fastening member adapted to couple the tether to a wall of a ventricle in response to a torque applied to the proximal end of the tether.

8. (Original) The apparatus of claim 7, wherein the fastening member comprises a helical anchor having a length that may be completely embedded in a wall of a ventricle.

9. (Original) The apparatus of claim 8, wherein the helical anchor comprises a barbed coiled spring.

10. (Original) The apparatus of claim 7, further comprising a patch having a cross-sectional area greater than a cross-sectional area of the tether and coupled about an axis of the tether at a portion proximal to the fastening member.

11. (Original) The apparatus of claim 1, wherein the tether has a length suitable for extending, at a proximal end, through an interatrial septum, the apparatus further comprising a patch having a cross-sectional area greater than a cross-sectional area of the tether and coupled about an axis of the tether at a portion, when the tether is placed through an interatrial septum and coupled at its distal end to a wall of a ventricle, that is proximal to the interatrial septum.

12. (Original) The apparatus of claim 11, further comprising a fastening member adapted to fasten a distal side of the patch to the interatrial septum.

13. (Original) The apparatus of claim 12, further comprising a stop coupled to the tether at a position on the proximal side of the patch.

14. (Withdrawn) The apparatus of claim 1, further comprising a ring having a diameter corresponding to an inner diameter of an atrioventricular valve annulus, wherein the aptation device is coupled at a proximal end to the ring.

15. (Withdrawn) The apparatus of claim 14, wherein the ring comprises a bridge extending across the ring and the aptation device is coupled to the bridge.

16. (Withdrawn) The apparatus of claim 15, wherein the bridge has an arcuate shape such that when positioned within an atrioventricular valve annulus, a portion of the bridge resides in an atrium.

17. (Original) The apparatus of claim 1, wherein the aptation device is coupled to the tether at a position corresponding to a position between cusps of an atrioventricular valve when the tether is positioned through an atrioventricular valve, and having a size suitable, when placed between cusps of an atrioventricular valve, that the cusps will aptate against the aptation device.

18. (Original) The apparatus of claim 17, wherein the aptation device comprises a cylindrical body.

19. (Original) The apparatus of claim 17, wherein a proximal end of the aptation device is coupled about an axis of the tether.

20. (Original) The apparatus of claim 17, wherein the aptation device comprises an ellipsoid body.

21. (Withdrawn) The apparatus of claim 17, wherein the aptation device comprises one of a conical body and a tear drop shaped body.

22. (Original) The apparatus of claim 1, wherein the aptation device is coupled to the tether at a position corresponding to a position completely within an atrium during systole when the tether is positioned through an atrioventricular valve, such that one or both cusps contact a surface of the aptation device during systole.

23. (Original) The apparatus of claim 1, wherein the aptation device has a size that is less than a commissure of the cusps of the atrioventricular valve.

24. (Withdrawn) The apparatus of claim 23, wherein the aptation device comprises a disc-shaped body.

25. (Withdrawn) The apparatus of claim 24, wherein the aptation device comprises a superior surface and an inferior surface, and the inferior surface comprises a ridged surface topography.

26. (Withdrawn) The apparatus of claim 24, wherein the aptation device has at least one hole extending between the superior surface and the inferior surface.

27. (Withdrawn) The apparatus of claim 24, wherein the aptation device comprises a body having a marginal section along a longitudinal axis making the aptation device susceptible to a plication along the marginal section, the apparatus further comprising:

a sleeve coupled to the tether and positioned proximal to the aptation device, the sleeve having a dimension sufficient to minimize the plication of the aptation device in one direction.

28. (Original) The apparatus of claim 1, wherein the aptation device comprises a material that inhibits thrombosis.

29. (Withdrawn) The apparatus of claim 1, wherein the aptation device comprises a visualization marker.

30. (Original) The apparatus of claim 1, wherein the tether comprises a conductive lead.

31. (Original) The apparatus of claim 1, wherein a coupling point of the aptation device to the tether is adjustable.

32. (Withdrawn) The apparatus of claim 1, further comprising:

a catheter comprising a body suitable for introduction and advancement through a vasculature of a patient and comprising a lumen therethrough, wherein in a deployment mode, a portion of the tether and the aptation device are confined within the lumen.

33. (Withdrawn) A method comprising:

percutaneously advancing an aptation device to a location to contact cusps of an atrioventricular valve; and

tethering the aptation device to a wall of a ventricle.

34. (Withdrawn) The method of claim 33, wherein tethering comprises positioning a distal end of a tether coupled to the aptation device in the wall of the ventricle.

35. (Withdrawn) The method of claim 34, wherein the distal end of the tether comprises a helical anchor and positioning a distal end comprises turning the helical anchor into the wall of the ventricle.

36. (Withdrawn) The method of claim 35, wherein the tether comprises a patch coupled about an axis of the tether and positioned proximal to the helical anchor and turning the helical anchor into the wall of the tether further comprises turning until the patch contacts the wall of the ventricle.

37. (Withdrawn) The method of claim 33, further comprising tethering the aptation device to an interatrial septum.

38. (Original) The method of claim 37, wherein the aptation device is coupled to a tether having a length suitable for extending through a ventricle of a heart from, at a proximal end, an interatrial septum to, at a distal end, a wall of a ventricle and tethering the aptation device to an interatrial septum comprises:

fixing the position of the tether at a proximal side of the interatrial septum.

39. (Withdrawn) The method of claim 37, wherein tethering the aptation device to an interatrial septum comprises tethering with only enough play to maintain the aptation device between cusps of the atrioventricular valve during systole.

40. (Withdrawn) The method of claim 37, wherein the aptation device is coupled to a tether having a length suitable for extending through a ventricle of a heart from, at a proximal end, an interatrial septum to, at a distal end, a wall of a ventricle, and tethering comprises tethering the distal end of the tether to the wall of the ventricle with play in the tether between the atrioventricular valve and the wall of the ventricle.

41. (Withdrawn) The method of claim 40, further comprising positioning the aptation device relative to the tether.

42. (Withdrawn) The method of claim 33, wherein the aptation device is coupled at a proximal end to a ring having a diameter corresponding to an inner diameter of an atrioventricular valve annulus, the method comprising seating the ring in an atrioventricular valve annulus.

43. (Withdrawn) The method of claim 39, wherein the ring comprises a bridge across the ring and the aptation device is coupled to the bridge.

44. (Withdrawn) The method of claim 33, wherein the aptation device is located completely within an atrium during systole such that one or both cusps contact a surface of the aptation device during systole.

45. (Withdrawn) The method of claim 33, wherein the aptation device has a size less than a commissure between the cusps and tethering comprises positioning the aptation device at a desired point along the commissure.

46. (Withdrawn) An apparatus comprising:

a support annulus comprising a length corresponding to a circumference of one of an interior portion of an atrium and an atrioventricular valve annulus; and

an aptation device coupled to the support annulus corresponding to a location to contact cusps of an atrioventricular valve when the support annulus is seated in one of an atrium and an atrioventricular valve annulus,

wherein the support annulus and aptation device are suitable for percutaneous delivery to a patient.

47. (Withdrawn) The apparatus of claim 46, wherein the support annulus comprises a tubular first body defining an inner lumen and a second body extending through the inner lumen, the second body comprising a first end and a second end, the first end and second end capable of being coupled to one another.

48. (Withdrawn) The apparatus of claim 47, wherein the first end and the second end of the second body comprise mating ends of a zip tie fastener.

49. (Withdrawn) The apparatus of claim 47, further comprising a tensioning arm coupled to one of the first end and the second end to advance the one of the first end and the second end relative to the other.

50. (Withdrawn) The apparatus of claim 47, further comprising a plurality of protruding barbs coupled to an exterior of one side of the support annulus and having a protruding dimension suitable for embedding into a tissue around one of an interior portion of an atrium and an atrioventricular valve annulus.

51. (Withdrawn) The apparatus of claim 46, wherein the aptation device is coupled at a first point and a second point on the support annulus, the first point and the second point selected such that when the support annulus adopts a shape corresponding to a shape of one of an atrium and an atrioventricular valve annulus, the aptation device forms a bridge across the support annulus.

52. (Withdrawn) The apparatus of claim 51, wherein the aptation device comprises a length dimension suitable to extend between cusps of an atrioventricular valve.

53. (Withdrawn) The apparatus of claim 52, wherein the aptation device comprises a bladder.

54. (Withdrawn) The apparatus of claim 53, wherein the aptation device comprises a valve coupled to the bladder that controls access to a lumen into the bladder.

55. (Withdrawn) The apparatus of claim 52, wherein the aptation device comprises a first profile at a portion of the length dimension adjacent the bridge and a larger second profile at a portion of the length dimension that is suitable to extend between cusps of an atrioventricular valve.

56. (Withdrawn) The apparatus of claim 55, wherein the portion of the length dimension that is suitable to extend between cusps of an atrioventricular valve is divided into at least two segments.

57. (Withdrawn) The apparatus of claim 55, wherein the first profile and the second profile comprise a side section and collectively the first profile and the second profile resemble a tear drop.

58. (Withdrawn) The apparatus of claim 52, wherein the aptation device comprises a conical body having a first diameter adjacent the support annulus and a second smaller diameter at a portion of the length dimension that is suitable to extend between cusps of an atrioventricular valve.

59. (Withdrawn) The apparatus of claim 58, wherein a cross section of the conical body is circular.

60. (Withdrawn) The apparatus of claim 58, wherein the cross-section of the conical body is elliptical.

61. (Withdrawn) The apparatus of claim 46, further comprising at least one tether having a length suitable for extending through a ventricle from, at a proximal end, the support annulus to, at a distal end, a wall of a ventricle.

62. (Withdrawn) The apparatus of claim 61, wherein the aptation device is coupled to the tether.

63. (Withdrawn) The apparatus of claim 62, wherein a coupling point of the aptation device to the tether is adjustable.

64. (Withdrawn) The apparatus of claim 46, wherein the aptation device comprises a material that resists thrombosis.

65. (Withdrawn) The apparatus of claim 46, further comprising:

a catheter comprising a body suitable for introduction and advancement through a patient and comprising a lumen therethrough, wherein in a deployment mode, the support annulus and the aptation device are confined within the lumen.

66. (Withdrawn) A method comprising:

percutaneously advancing an aptation device to an atrioventricular valve location; and

deploying the aptation device to contact cusps of the atrioventricular valve.

67. (Withdrawn) The method of claim 65, wherein the aptation device comprises a bladder and deploying the aptation device comprises:

placing the bladder between cusps of an atrioventricular valve; and

inflating the bladder with a material to a volume such that the cusps will aptate against the bladder during systole.

68. (Withdrawn) The method of claim 66, wherein inflating the bladder with a material comprises inflating the bladder with a solidifying liquid.

69. (Withdrawn) The method of claim 65, wherein advancing an aptation device comprises advancing to one of an interior portion of an atrium and an atrioventricular valve annulus, the method further comprising:

fixing the aptation device to the one of an interior portion of an atrium and an atrioventricular valve annulus.

70. (Withdrawn) An apparatus comprising:

one of a tether having a length suitable for extending through a ventricle of a heart from, at a proximal end, an atrioventricular valve annulus to, at a distal end, one of a wall of a ventricle and a papillary muscle within the ventricle, the distal end comprising at least one hook, and a support annulus comprising a length corresponding to a circumference of one of an interior portion of an atrium and an atrioventricular valve annulus, the support annulus comprising at least one protruduring hook; and

an aptation device coupled to one of the tether and the support annulus,

wherein one of the tether and the support annulus and the aptation device are capable of being confined within a catheter suitable for percutaneous delivery to a vasculature of a patient.

71. (Withdrawn) The apparatus of claim 70, wherein in a confined state, the aptation device is folded from a first shape to a second different shape to reduce its profile and in a deployed state, adopts the first shape.

72. (Withdrawn) The apparatus of claim 70, wherein in a confined state, the support annulus comprises two non-connected ends.